

Date: Fri, 12 Nov 93 04:30:40 PST  
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>  
Errors-To: Ham-Homebrew-Errors@UCSD.Edu  
Reply-To: Ham-Homebrew@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Homebrew Digest V93 #101  
To: Ham-Homebrew

Ham-Homebrew Digest                      Fri, 12 Nov 93                      Volume 93 : Issue 101

Today's Topics:

                    homebrew help  
                    LM2941 Sources  
                    Looking for dials ...  
                    Phase-lock to WWV ? (2 msgs)  
                    remote switch  
                    SWR meters  
                    What's RG-22? (3 msgs)

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>

Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: 11 Nov 93 18:02:59 GMT  
From: ogicse!emory!europa.eng.gtefsd.com!howland.reston.ans.net!cs.utexas.edu!  
cactus.org!majec@network.ucsd.edu  
Subject: homebrew help  
To: ham-homebrew@ucsd.edu

I am thinking about a project to put in a swr protection circuit in my  
QRP radio. It is a TEN-TEC pm2. A direct conversion 1 watt vfo/crystal  
transceiver.

I am using a 10 ohm resistor in the dc line to the collector on the  
final, and when I have it tuned for the antenna I take the resistor  
out and close up the line. Crude I will admit. This is only a  
temporary fix and will not be good for portable operation such as  
camping etc. So....

Any suggestions for a protection circuit would be appreciated as i am

very new to the sport of ham homebrew and need some elmering on most things.

Thanks

Ed Guinn  
KB5RUF/AG  
majec@cactus.org

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Date: 11 Nov 93 21:49:48 GMT  
From: psinntp!arrl.org@uunet.uu.net  
Subject: LM2941 Sources  
To: ham-homebrew@ucsd.edu

In rec.radio.amateur.homebrew, bsn@fusion.ph.utexas.edu (Barry Newberger, W5KH) writes:

>Does anyone know of a source of LM2941T voltage regulators? This is  
>a variable output voltage device with with a series PNP pass  
>transistor.

Digi-Key now carries them.

Regards/WJ1Z

David Newkirk, WJ1Z	voice: 203-666-1541 X280
American Radio Relay League	fax: 203-665-7531
225 Main St, Newington CT 06111 USA	net: dnewkirk@arrl.org

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Date: Wed, 10 Nov 1993 10:28:29 GMT  
From: swrinde!gatech!howland.reston.ans.net!cs.utexas.edu!sdd.hp.com!  
apollo.hp.com!hpwin052!hpgmoea!dstock@network.ucsd.edu  
Subject: Looking for dials ...  
To: ham-homebrew@ucsd.edu

David Byrne (dmb@abacus.demon.co.uk) wrote:

: Any homebrewers (esp. in the UK) know of a source for dials ? I'm building  
: a SW superhet, and looking for a decent dial/reduction drive to use for the  
: vfo, ideally something with about 36:1 reduction. I remember seeing a  
: reduction drive with selectable 6:1 and 36:1 ratios years ago, but can't  
: seem to get anything better than 10:1 these days. I could use a second  
: variable cap. in parallel with the primary cap. for electronic bandspread  
: I suppose, but I'd prefer to stay mechanical because I think calibrating

: the freq. display dial will be easier.

: Any help appreciated,

The 6:1/36:1 things were done by jackson, I still have a couple of them around somewhere, but I never liked the feel. Ball drive reducers are a bit too prone to wear for the main tuning of a receiver used to regularly roam the bands. The eddystone receivers and the "898" dial all have skinny little plain bushes for the tuning knob shaft and are prone to wear, it is unlikely that you'll find one in the junk at a rally that you would really want to use.

FIND A JUNK BC221 frequency meter. All ball race, no backlash, no endfloat, the combined gearbox and capacitor in one of these is built to survive the end of the universe. 50 revs from end to end, no end stops it just goes round and round. About 11-176 pF (would you believe I happened to measure one last night, as I'm currently writing about just this subject for a publishing venture I'm involved in!) This is not flywheel tuning, but is very very smooth. A precision instrument.

You can easily prune out vanes from the rotor to reduce the capacitance swing, (putting them back is not so easy :-)

With one of these, you'll have no need for any increased bandspread.

Expect to pay \$10 to \$20 (I once got one for \$5!) The dial, gearbox, capacitor comes out as one unit, you just need 3 mounting screw holes in your panel, + a hole for the flange that takes the tuning knob, and a window for the turns counting drum to show through. You glue your own scale over this drum. Look for one in the photos of the last re of the G2DAF TRANSMITTER (MK3?) in the RSGB handbook.

No one seems to want antique calibrated oscillator type freq meters now counters are common.

Hope this helps

Cheers

David GM4ZNX

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Date: Wed, 10 Nov 1993 19:19:39 GMT  
From: news.cerf.net!pagesat!olivea!spool.mu.edu!howland.reston.ans.net!  
europa.eng.gtefsd.com!emory!rsiatl!ke4zv!gary@network.ucsd.edu  
Subject: Phase-lock to WWV ?  
To: ham-homebrew@ucsd.edu

In article <931109.82953.EDELLERS@delphi.com> Ed Ellers <EDELLERS@delphi.com> writes:

>I've got a better idea, if you have access to a satellite dish...find a color  
>TV whose circuitry is such that you can measure its color oscillator frequency  
>without too much trouble. Hook this up to the satellite receiver and tune in  
>NBC (Satcom F1R channel 8) or one of the ABC channels on Telstar 302 (they're  
>encrypted, but still have valid sync). These networks (as well as CBS) use  
>atomic standards to drive their master sync generators -- NBC is actually using  
>a cesium standard, I think CBS and ABC use rubidium -- so that their multiple  
>studio sites can be kept in sync without too much tweaking. With this hookup  
>in place set your counter to read 3.5795454... MHz (the 54s go on infinitely).

Unfortunately for this scheme, it doesn't work that way anymore, not that it ever really did. Master sync generators and genlocked slaves are an artifact of the past. Now, everywhere a signal enters a facility it passes through a frame synchronizer. This bit of digital magic has replaced the proc amp as well as removing the need to ever genlock sources together or attempt to keep stable time references.

A framesync A/D converts incoming video and clocks it into memory using a clock locked to the burst of the incoming signal. The signal is then clocked out of memory using a clock slaved to the local sync generator, usually an ordinary crystal oscillator, and D/A converted. Fields are skipped occasionally to prevent memory overruns in the circular memory buffer. Any time or frequency coherence with the original source material is lost.

Oddly enough, it was the development of satellite relay that prompted the development of the framesync. The delay through the satellite is such that normal genlock range was exceeded, and the doppler shift of even GEO sats caused intractable phase coherence problems. When we uplink to the satellite and watch our signal coming back on the downlink, we see the phase vector swing madly first in one direction then in the other as the satellite does it's little figure 8 in the sky.

The networks have retired their atomic clocks, the reference you get for satellite TV signals is the crystal oscillator at the particular uplink site. Note that the networks now often "live switch" the feed from uplink site to uplink site between programs. So one program may come out of NY, the next out of Charlotte, the next Atlanta, and the next out of LA, with individual segment feeds coming from mobile uplink trucks during breaking events. All of those using a different crystal timing reference. If your TV is old, you may see a sync roll or noise burst at the switch between programs, but modern TVs take it in stride. Everybody is supposed to keep burst within +/- 10 Hz of it's nominal value, and they usually do, but it's certainly no longer atomic clock traceable.

Gary

--

Gary Coffman KE4ZV	"If 10% is good enough	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	for Jesus, it's good	uunet!rsiatl!ke4zv!gary
534 Shannon Way	enough for Uncle Sam."	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-Ray Stevens	

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Date: 10 Nov 93 16:21:04 GMT  
From: sdd.hp.com!hpscit.sc.hp.com!rkarlqu@hplabs.hp.com  
Subject: Phase-lock to WWV ?  
To: ham-homebrew@ucsd.edu

In article <931109.82953.EDELLERS@delphi.com>,  
Ed Eilers <EDELLERS@delphi.com> wrote:  
>encrypted, but still have valid sync). These networks (as well as CBS) use  
>atomic standards to drive their master sync generators --  
>NBC is actually using  
>a cesium standard, I think CBS and ABC use rubidium -- so that their multiple  
>studio sites can be kept in sync without too much tweaking. With this hookup  
>in place set your counter to read 3.5795454... MHz (the 54s go on infinitely).

As far as I know from talking to people in both the TV and atomic clock  
industries, the networks no longer use atomic clocks, because the widespread  
use of digital time base correctors has made them unnecessary.

>

>Interestingly enough, since WWV's master clock site in Boulder doesn't have a  
>clear line of sight to the transmitters in Fort Collins, they have an  
>arrangement  
>with one of the Denver TV stations; they microwave a clock signal over to that  
>station (I've forgotten which one) and have gear there to phase-lock the color  
>subcarrier to it. At the WWV Fort Collins site they then take the signal off  
>air and phase-lock all their frequency standards to the burst; audio gets  
>there over a leased phone line from Boulder.

I don't have specific knowledge of the case you site, but the normal  
way this is done is different from what you described. Normally,  
nothing special is done at the TV station. Rather, the two sites who  
want to synchronize measure the frequency of the TV station at the same  
time and use the ratio of the two measurements to calibrate the slave  
site to the master site. This is what the Naval Observatory does in  
Washington DC with channel 5 when they want to calibrate a remote site  
to the clocks at the Observatory. At HP, we use channel 7 in San Francisco  
to transfer frequency from our Santa Clara facility to others in the  
bay area. That doesn't help Joe Ham though because channel 7 doesn't  
have an atomic clock. In fact, the technical types at channel 7 that

I have talked to were unaware we were even using their signal.

Rick Karlquist N6RK  
HP Santa Clara Division (where atomic clocks are made)  
rkarlqu@scd.hp.com

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Date: Tue, 9 Nov 1993 20:03:40 GMT  
From: swrinde!gatech!howland.reston.ans.net!cs.utexas.edu!sdd.hp.com!  
hpscit.sc.hp.com!hplextra!hpfcso!sbass@network.ucsd.edu  
Subject: remote switch  
To: ham-homebrew@ucsd.edu

As part of a project of mine, I would like to construct a remote control switch that operates on principles used by garage door openers and car alarm systems. I was hoping that some of you might have personal experience in radio circuitry that would be willing to give me a few pointers, or refer me to some practical technical text on the subject. I need to make this thing from scratch for use as a part of a demonstration. If you can help me, please send me some e-mail. Thanks in advance.

Steve Bass  
sbass@fc.hp.com

-----  
Date: 11 Nov 93 23:53:16 GMT  
From: ogicse!uwm.edu!msuinfo!phlox!cravitma@network.ucsd.edu  
Subject: SWR meters  
To: ham-homebrew@ucsd.edu

If anyone has any (relatively non-complicated to build) plans for a VHF SWR meter that they could mail or Fax me, I would really appreciate it if you could drop me a note (I use my dad's Fax machine at work, so I don't want 500 people Faxing me stuff). So, please drop me a note to cravitma@cps.msu.edu if you have such a thing.

Thanks and 73,

/Matthew

--  
Matthew Cravit | "So I sent him to ask of the  
Michigan State University | owl, if he's there, how to  
East Lansing, MI 48825 | loosen a jar from the nose  
E-Mail: cravitma@cps.msu.edu | of a bear..."

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Date: 11 Nov 93 16:29:47 GMT  
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu  
Subject: What's RG-22?  
To: ham-homebrew@ucsd.edu

Doug Braun (dbraun@iil.intel.com) wrote:

: I was at this surplus electronic junk place, and they  
: had a big spool of "RG-22" coax cable. I couldn't  
: tell much about it, except that it seemed to resemble  
: RG-8. None of my references (ARRL Handbook, Antenna Book, etc.)  
: mention this type of cable. Anyone ever heard of it?

RG-22/U: twin conductor (you didn't notice that??) double  
braid shielding. 95 ohms (between the balanced conductors).  
You might be able to use it as coax by connecting the two  
conductors together, but why bother...

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Date: Thu, 11 Nov 1993 17:01:51 GMT  
From: sdd.hp.com!cs.utexas.edu!howland.reston.ans.net!sol.ctr.columbia.edu!  
news.kei.com!ub!csn!yuma!galen@network.ucsd.edu  
Subject: What's RG-22?  
To: ham-homebrew@ucsd.edu

In article <2brd7a\$4a@ilx049.intel.com> dbraun@iil.intel.com (Doug Braun) writes:  
>I was at this surplus electronic junk place, and they  
>had a big spool of "RG-22" coax cable. I couldn't  
>tell much about it, except that it seemed to resemble  
>RG-8. None of my references (ARRL Handbook, Antenna Book, etc.)  
>mention this type of cable. Anyone ever heard of it?  
>Thanx in advance,  
>Doug Braun Intel Israel, Ltd. M/S: IDC1-41  
>4X/N10WU Tel: 011-972-4-655069 dbraun@inside.intel.com

I can't find it in either the Belden catalog or the Reference Data for  
Engineers.

Who makes it? Any other numbers, etc on the jacket?  
galen,KF0YJ

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Date: 11 Nov 1993 12:47:42 GMT  
From: library.ucla.edu!agate!spool.mu.edu!nigel.msen.com!caen!

dowmac165.engin.umich.edu!user@network.ucsd.edu  
Subject: What's RG-22?  
To: ham-homebrew@ucsd.edu

According to my 'Reference Data for Engineers', 7th edition, RG-22 is a twin conductor, polyethylene dielectric cable. 16 pF/ft capacitance, 1000 Vrms rating, Impedance of 95 ohms.

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Date: 11 Nov 93 08:39:42 GMT  
From: ogicse!emory!kd4nc!ke4zv!gary@network.ucsd.edu  
To: ham-homebrew@ucsd.edu

References <Pg12Bc2w165w@inqmind.bison.mb.ca>, <931109.82953.EDELLERS@delphi.com>, <2brk68\$qh5@reznor.larc.nasa.gov>  
Reply-To : gary@ke4zv.UUCP (Gary Coffman)  
Subject : Re: Phase-lock to WWV ?

In article <2brk68\$qh5@reznor.larc.nasa.gov> kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:

>  
>It used to be that you could depend on your local TV station for highly  
>accurate timing reference, but not any longer. I don't know about the actual  
>network feeds, though. Gary, do you have a clue?

Yeah, I answered this before. The networks don't use atomic clocks anymore either. The frame synchronizer has made the requirement for high stability references obsolete, and the change to satellite distribution from the old microwave long haul nets has added the problem of satellite induced doppler. A few stations have an atomic reference for their transmitted carrier frequency, WSB in Atlanta does, but they'll likely replace it with a crystal the next time it breaks. These old frequency standards are getting to be a pain to keep running. The FCC only requires that TV broadcasters maintain a frequency tolerance of +/- 1,000 Hz for their carriers, and +/- 10 Hz for the color subcarrier. That's easily done with just a crystal oscillator.

Inside the plant we keep everything locked together for ease of editing and switching, but we really don't care about the absolute frequency as long as it's the same throughout the plant. The frame syncs fix out of house signals so they match our internal reference, and the viewer's TV sets don't care anyway.

Sorry guys, we aren't NBS, or NIST as they call themselves now. We're just trying to make a buck as cheaply as we can. We use



Hi-8 and even VHS internally nowadays. The days when broadcast was profitable enough to afford the best are gone forever.

Gary

--

Gary Coffman KE4ZV	"If 10% is good enough	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	for Jesus, it's good	uunet!rsiatl!ke4zv!gary
534 Shannon Way	enough for Uncle Sam."	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-Ray Stevens	

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End of Ham-Homebrew Digest V93 #101

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